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Evaluation of ConPrim: A three-part model for continuing education in primary health care

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ABSTRACT

Background: To overcome the gap between existing knowledge and the application of this knowledge in practice, a three-part continuing educational model for primary health care professionals (ConPrim) was developed. It includes a web-based program, a practical exercise and a case seminar.
Aim: To evaluate professionals' perceptions of the design, pedagogy and adaptation to primary health care of the ConPrim continuing educational model as applied in a subject-specific intervention.
Methods: A total of 67 professionals (nurses and physicians) completed a computer-based questionnaire evaluating the model's design, pedagogy and adaptation to primary health care one week after the intervention. Descriptive statistics were used.
Results: Over 90% found the design of the web-based program and case seminar attractive; 86% found the design of the practical exercise attractive. The professionals agreed that the time spent on two of the three parts was acceptable. The exception was the practical exercise: 32% did not fully agree. Approximately 90% agreed that the contents of all parts were relevant to their work and promoted interactive and interprofessional learning. In response to the statements about the intervention as whole, approximately 90% agreed that the intervention was suitable to primary health care, that it had increased their competence in the subject area, and that they would be able to use what they had learned in their work.
Conclusions: ConPrim is a promising model for continuing educational interventions in primary health care. However, the time spent on the practical exercise should be adjusted and the instructions for the exercise clarified. ConPrim should be tested in other subject-specific interventions and its influence on clinical practice should be evaluated.

1. Background

In clinical contexts, including primary health care, up–to-date knowledge is of the utmost importance, as is the ability to reflect on and apply it in practice. Without such knowledge and ability, patients' needs might go unrecognized and thus unmet. Furthermore, there is frequently a gap between what is known and what is done to solve basic health care problems (World Health Organization WHO, 2006). One contributing factor may be an insufficiently met need for continuing education in primary health care (Anwar and Batty, 2007; Baxter et al., 2013). A related problem is the lack of comprehensive models – frameworks or templates for educators to use when designing continuing educational interventions in primary health care. This study aimed to evaluate primary health care professionals' perceptions of such a model, which was tested using the subject-specific intervention "Nutritional care of patients cared for at home".

Nutritional care of patients cared for at home is an example of a subject in which the gap between evidence-based knowledge and the application of this knowledge in practice (Saletti et al., 2005) has important consequences for patients (Suominen et al., 2014). The Swedish National Board of Health and Welfare has recognized (National Board of Health and Welfare, 2011) that there is an ongoing problem with achieving proper nutritional care for patients who are chronically ill, and project funding has been earmarked to address the problem. Our multi-professional research group, which works at an academic center

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for family medicine, was given the mandate to tailor an educational intervention for primary health care professionals in this subject.

Based on a literature search education should ideally meet a number of needs. First, continuing education should be adapted to the circumstances of primary health care as professionals often have practical difficulty attending continuing educational courses (Baxter et al., 2013; Phillips et al., 2012). High workloads (Phillips et al., 2012; Swedish Association of Local Authorities and Regions, 2012) and the need to travel long distances to the places where courses are held can make participation difficult (Phillips et al., 2012; Steinert, 2005). Continuing educational courses should be adapted to the professionals' everyday work, as they are reluctant to attend courses on subjects and patient cases that are less relevant to primary care (Fleet et al., 2008) and thus might not meet their learning needs.

Second, there is a need for interprofessional education in order to enable effective collaboration and teamwork, as also suggested by the WHO (World Health Organization WHO, 2002) i.e., education in which two or more professions learn *about, from* and *with* each other. Studies also show that interprofessional continuing educational programs are necessary and effective in increasing interprofessional collaboration and improving health care outcomes (Gilbert et al., 2010; Reeves et al., 2013).

Third, there is a need to use pedagogical methods that enable professionals to achieve a deep level of understanding, and even the Cochrane Collaboration calls for increased focus on the concepts or theories behind continuing educational programs for health care professionals (Forsetlund et al., 2009).

Interprofessional education draws from a number of theories (Barr, 2013; Sargeant, 2009; Thistlethwaite, 2012) that can help learners achieve the necessary deep level of understanding. One is constructivism, which emphasizes the importance of "the learner's activities in creating meaning" (Biggs and Tang, 2011). In constructive alignment, which draws on constructivist theory, learners start by acquiring increasing amounts of factual knowledge and move toward the ability to integrate their knowledge into a structured whole. Ultimately, they are able to reflect on and apply their understanding to other situations and different contexts (Biggs and Tang, 2011).

A literature search for models upon which to base the intervention uncovered many interventions and several models that included one or more of the aspects that the research group had deemed necessary. However, the group found no interventions and no models that comprehensively met all the identified needs. Some models focused on clinical workplace learning in primary care (Anwar and Batty, 2007; Dornan et al., 2007) and even on the use of reflection in practice (Sargeant et al., 2015) but were only for the members of one profession. One large, visionary model encompassed interprofessional, workplace-based education for all professions at all stages of their careers (Miller et al., 2010). However, no evaluation of the model had been published, and the model was too broadly described to emulate. For instance, none of the individual components (including the continuing educational component) were explicitly detailed. Moreover, the model's pedagogical basis was not stated in the published materials.

For these reasons, the group developed the ConPrim model, in order to include adaptation to primary health care, interprofessional learning and validated pedagogical models. As a test, it was applied in the subject-specific intervention "Nutritional care of patients cared for at home".

A study of the effectiveness of the intervention on professionals' knowledge about the subject and collaboration with other caregivers has been published separately (Berggren et al., 2016). However, because little information is available about previous models, the multi-professional research group also chose to evaluate the model itself as applied in the subject-specific intervention. Such information is important for quality assurance and to improve models for continuing education. Without such evaluations, there is a risk of missing unexpected positive or negative aspects of educational interventions (Thistlethwaite et al., 2014). The aim of this study was thus to evaluate professionals' perceptions of the design, pedagogy and adaptation to primary health care of the ConPrim continuing educational model as applied in a subject-specific intervention.

2. Methods

2.1. Study Design

The study had an evaluative design. Primary health care professionals (nurses and physicians) answered a computer-based study-specific questionnaire one week after finishing the intervention. The questionnaire focused on their perceptions of the model's design, pedagogy and adaptation to primary health care.

2.2. Description of the ConPrim Model and How It Was Applied in the Intervention

The research group that developed the ConPrim model and the intervention consisted of a dietitian, three registered nurses, and two physicians who have many years of relevant experience working in primary health care, nutritional and palliative care of patients cared for at home, primary care research, and the development of continuing education for primary care professionals. Furthermore, although the members of the research group have pedagogical education and teaching experience, three others with pedagogical expertise were consulted during the development of the model.

The pedagogical theory underpinning the ConPrim model is constructive alignment (Biggs and Tang, 2011). Constructive alignment is an influential educational theory, developed by John Biggs, that merges constructivism with alignment: the idea that intended learning outcomes, teaching and learning activities, and assessments should work together (be aligned) to enable learners to achieve deeper levels of knowledge. In constructive alignment, the five-level Structure of the Observed Learning Outcome (SOLO) taxonomy is a way to classify the levels of understanding through which learners progress (Biggs and Tang, 2011). The SOLO taxonomy also helps educators (who will develop subject-specific interventions) create intended learning outcomes and relate these outcomes to learning activities and assessments via specific verbs associated with each level in the taxonomy (Biggs and Tang, 2011).

The three parts of the ConPrim model, which follow SOLO taxonomy levels two through five (Table 1), are 1) a web-based program, 2) a practical exercise and 3) a case seminar. In accordance with constructive alignment, intended learning outcomes, relevant teaching/learning activities and assessment tasks (Biggs and Tang, 2011) were chosen for each of the three parts of the model. Furthermore, interprofessional education was incorporated in each part. To facilitate participation, the three parts were performed at the workplace. Moreover, the times at which the various parts were carried out were chosen by the participating professionals, although the subject-specific intervention was to be completed within one month.

2.3. Schedule of Activities in the Model

1) *Week 1, web-based program (1 h)*. This first part of ConPrim is intended to achieve SOLO taxonomy levels two and three. The web-based program is built around evidence-based facts. It includes a short printable introduction to the subject, descriptive drawings illustrating the main points and a list of relevant references. Interactive multiple-choice questions about a patient case enable professionals to assess what they have learned. The web-based program incorporates an interprofessional perspective in a variety of ways. It includes descriptions from the perspective of the professions participating in the intervention (in the present intervention, nurses and physicians), drawings depicting the work of these professions, a patient case representative of those seen in primary health care and

Table 1
The relationship between the three parts of ConPrim® and the parts of the constructive alignment.

	Constructive alignment		
The three parts of ConPrim®[a]	SOLO[b] taxonomy levels	Intended learning outcomes (verbs)	Teaching/learning activities and assessment tasks
1. Web-based program	2 and 3	Identify, combine	Theoretical education on web with inter-professional component, case-based exercise (read about facts, follow a patient case combined with answering interactive multiple-choice questions)
2. Practical exercise	3 and 4	Describe, discuss	Practical exercise with inter-professional component: nurse uses Mini Nutritional Assessment at home visit and describes and discusses results with the physician. Nurse and physician take any action necessary
3. Case seminar	4 and 5	Relate, solve, reflect	Case seminar facilitators hold educator-facilitated case seminars with inter-professional component: read cases, reflect on and solve an authentic case in a case-seminar discussion

[a] ConPrim® = continuing educational model for primary health care professionals.
[b] SOLO = structure of Observed Learning Outcome.

requiring teamwork, and questions about the relevant responsibilities of the participating professions.

To make the case relevant to primary health care circumstances, it is created on the basis of interviews with representatives of the professions that will be included in the subject-specific intervention. The professionals are also given the option to complete the subject-specific web program individually at a time and place of their choice and the option to stop and continue whenever they wish.

2) *Weeks 2 and 3, practical exercise* (*1.5 h*). The second part of ConPrim is intended to achieve SOLO taxonomy levels three and four. Practical learning, interprofessional education and adaptation to primary health care circumstances are achieved through an on-the-job task tailored to the specific subject of the intervention. The professionals are encouraged to describe and discuss the outcome(s) of the practical exercise with members of the relevant collaborating professions at their workplace and to collaborate to take actions as needed.

In the case of the subject-specific intervention "Nutritional care of patients cared for at home", the nurses were asked to conduct a home visit at which they used the Mini Nutritional Assessment tool (Berggren et al., 2016) and three additional forms related to nutrition. After the home visit, the nurse was to discuss the patient's nutritional status with the physician. In collaboration, the nurse and physician were then to take any further actions they deemed necessary; for example, initiate a care plan meeting with the patient and a dietitian or other appropriate health care professional.

The location of the practical exercise should be appropriate to each subject-specific intervention. Thus, in other interventions designed using ConPrim, the on-the-job task could take place either in patients' homes or at the health care center.

3) *Week 4, case seminar* (*1.5 h*). The last part of ConPrim is intended to achieve the kinds of understanding described in SOLO taxonomy levels four and five (see Table 1). Case learning methodology (Mauffette-Leenders et al., 1997) is used to create descriptions of a single authentic patient case for use in the seminar discussions. To ensure adaptation to primary health care, the case is created on the basis of interviews with members of the participating professions, and a description is written from each participating profession's point of view. The members of each profession pre-read the patient case written from the perspective of their own profession (i.e., read the description before the case seminar). Then, at the seminar, they switch and read the same case but from the perspective of another profession. Finally, they discuss and solve the case in collaboration. To stimulate analytical discussions, reflections, creativity and problem-solving – and to stimulate decision-making on the basis of the professionals' previous knowledge and skills – the case is presented in the form of open-ended narratives without right, wrong or obvious answers. This kind of presentation has the further advantage of stimulating learning, as learning comes from reflection and participation in the search for solutions (Biggs and Tang, 2011).

In the case of the subject-specific intervention in nutritional care, one facilitator from each participating profession co-led the case seminar. The facilitators were trained in case methodology and experienced in the relevant primary health care context. They chose discussion themes ahead of time and used them to help structure and facilitate the discussion as needed.

2.4. The Subject-specific Intervention on Nutritional Care

As previously noted, the ConPrim model was used to design an intervention on the subject of nutritional care of patients cared for at home. The specific subject of all three steps of the intervention was nutritional care with a focus on patients' differing needs in the early and the late palliative phase. Prior to designing the intervention, to better understand the professionals' subject-specific learning needs, a literature search was conducted and interviews were undertaken with nurses and physicians working in primary health care. The multiprofessional research group then applied their expertise to reflect on the results in order to create an intervention that addressed the specific learning needs of the professionals.

The intervention was pilot tested in three steps in Swedish primary health care and carried out in ten primary health care centers in Stockholm County, Sweden. A detailed description of the subject-specific intervention has been published elsewhere (Berggren et al., 2016).

2.5. Recruitment of Participants

The participating professionals (nurses and physicians) were recruited from 10 of the 189 primary health care centers in Stockholm County (Berggren et al., 2016). All professionals were given written and verbal information about the study and that their participation was voluntary. The Regional Ethical Review Board in Stockholm, Sweden, approved the study (dnr.2011/1198-31/2).

2.6. Data Collection Instrument

Because the evaluation required answers to specific questions about the ConPrim model from the primary health care professionals' point of view, a study-specific questionnaire was developed. Moreover, to maximize the information gathered, the answers were in the form of a scale with response alternatives that did not include "do not know" or "no opinion". The questionnaire was pilot tested in primary health care, and the final version consisted of nine positive statements about the intervention with the response alternatives "fully agree" (score: 4), "mainly agree" (score: 3), "partly agree" (score: 2), and "do not agree at all" (score: 1).

The final questionnaire covered the model's design, pedagogy, adaptation to primary health care, and self-reported subject-specific learning (Table 2). There was also a question about whether the professional had

Table 2
The 67 professionals' evaluations of the "Continuing educational model for primary health care professionals" (ConPrim®) as applied in a subject-specific intervention.

Areas	md[a] (IQR)[b] mean rank	Fully agree (4) n (%)	Mainly agree (3) n (%)	Partly agree (2) n (%)	Do not agree at all (1) n (%)
Design					
1. The web-based program was user-friendly (n = 66)	4(3–4) 3.6	46 (70)	16 (24)	4 (6)	–
2. The following three parts of the intervention had an attractive design					
1a Web-based program, introd. (PDF) (n = 66)	4(3–4) 3.5	36 (55)	24 (36)	6 (9)	–
1b Web-based program (n = 66)	4(3–4) 3.5	38 (58)	22 (33)	6 (9)	–
2 Practical exercise (n = 63)	3(3–4) 3.2	30 (48)	24 (38)	5 (8)	4 (6)
3 Case seminar (n = 67)	4(3–4) 3.5	37 (55)	25 (37)	3 (5)	2 (3)
Pedagogy and interprofessional education					
3. The pedagogy (teaching methods) used in the intervention promoted learning:					
a. Interactive learning (all three parts of the intervention) (n = 67)	4(3–4) 3.5	36 (54)	27 (40)	4 (6)	–
b. Inter-professional learning (all three parts of the intervention) (n = 67)	4(3–4) 3.5	37 (55)	25 (37)	5 (8)	–
c. Case methodology (n = 67)	4(3–4) 3.4	38 (57)	22 (33)	5 (7)	2 (3)
Adaptation to primary health care					
4. The amount of working time spent on the following parts of the intervention was acceptable					
1a Web-based program, introd. (PDF) (n = 67)	4(3–4) 3.5	41 (61)	19 (28)	7 (11)	–
1b Web-based program (n = 67)	4(3–4) 3.6	37 (55)	18 (27)	11 (16)	1 (2)
2 Practical exercise (n = 63)	3(2–4) 2.9	27 (43)	16 (25)	13 (21)	7 (11)
3 Case seminar (n = 66)	4(3–4) 3.3	39 (59)	16 (24)	7 (11)	4 (6)
5. The contents of the following parts of the intervention were relevant to my work					
1a Web-based program, introd. (PDF) (n = 67)	4(3–4) 3.5	40 (60)	20 (30)	7 (10)	–
1b Web-based program (n = 67)	4(3–4) 3.5	39 (58)	23 (34)	5 (8)	–
2 Practical exercise (n = 62)	3(3–4) 3.2	31 (50)	23 (37)	5 (8)	3 (5)
3 Case seminar (n = 66)	4(3–4) 3.5	41 (62)	20 (30)	4 (6)	1 (2)
6. I will be able to use what I have learned from the intervention in my work (n = 67)	4(3–4) 3.4	36 (54)	23 (34)	7 (10)	1 (2)
7. The design of the intervention was suitable to primary health care (n = 67)	4(3–4) 3.4	35 (52)	27 (40)	5 (8)	–
Subject-specific learning					
8. The program increased my competence in the subject area (n = 67)	4 (3–4) 3.4	36 (54)	24 (36)	5 (7)	2 (3)

[a] md = median.
[b] IQR = interquartile ranges.

completed each part of the intervention. The professionals were given the opportunity to provide comments at the end of the questionnaire.

The questionnaire was computer-based to make it as quick and easy as possible for the professionals to complete. One week after finishing the intervention, the professionals completed the study-specific computer-based questionnaire evaluating the model. To ensure their confidentiality, they did not provide their names or any other information that could be used to trace the questionnaire to a specific person.

2.7. Data Analysis

The scales used in the questionnaire were ordinal, and median values, interquartile ranges and percentages were therefore used to describe the data. However, results are also presented as mean ranks. Sample comments made by professionals that were relevant to the results of the analyses are presented in the result section.

3. Results

Sixty-seven of the 87 professionals who participated in the subject-specific intervention completed the questionnaire. The results are shown in Table 2. Over 90% agreed that the design of the case seminar was attractive and that the web-based program was attractive and user-friendly. Slightly fewer (86%) found the design of the practical exercise attractive.

Regarding the pedagogy, ≥90% agreed that all three parts of the intervention promoted interactive learning, all three parts promoted interprofessional learning and the case methodology part (case seminar) promoted learning. A number of professionals volunteered comments about interprofessional learning. One said, "The case seminar gave all of us an energy boost to continue working with collaboration issues". Another said, "Very good focusing on the team. Need to continue to work with that".

The professionals found the amount of time spent on two of the three parts of the intervention to be acceptable; however, some (32%) did not fully agree that the amount of working time spent on the practical exercise was acceptable. Approximately 90% agreed that the contents of all parts of the intervention were relevant to their work.

When asked about the intervention as whole, approximately 90% agreed that it was suitable to primary health care, that it had increased their competence in the subject area and that they would be able to use what they had learned in their work.

4. Discussion

The aim of this study was to evaluate professionals' perceptions of the design, pedagogy and adaptation to primary health care of the ConPrim continuing educational model as applied in a subject-specific intervention. In summary, the professionals gave positive evaluations to all the areas of the model as it was applied in the subject-specific intervention "Nutritional care of patients cared for at home". Some, however, did not fully agree that the amount of time spent on the practical exercise was acceptable.

4.1. Key Findings in the Context of the Broader Literature

A number of earlier studies have evaluated the outcomes of educational interventions that were based on a variety of pedagogical methods. Our finding that nearly 90% of the professionals fully or mainly agreed that the intervention was useful to their work is in line with the results of previous studies of the usefulness of educational methods, including web-based programs (Cook and Steinert, 2013), practical

exercises (Clay et al., 2013; Govaerts et al., 2011) and case methodology (Abildsnes et al., 2012; Tripathy, 2008).

Previous researchers have also called for evaluations of interprofessional education that assess not only the outcomes, but also the factors behind the outcomes, such as the learning environment and teaching and learning methods used (Thistlethwaite et al., 2014). The desire to evaluate such factors informed the current study's focus on the three parts of ConPrim that were designed to be the mechanisms behind the outcomes.

Professionals' evaluations of the model's adaptation to primary health care were positive. An important component of the model's adaptation to primary health care was attention to the issue of time. Lack of time is a known barrier to the participation of health care professionals in continuing education; practitioners express difficulty with balancing work and educational demands (Altin et al., 2014; Baker et al., 2010; Phillips et al., 2012). Despite this well-known barrier, the professionals reported that the time spent on most parts of the model was reasonable. Nevertheless, the results indicated that not all professionals found the amount of time spent on the practical exercise acceptable. There are several possible explanations for this finding. One may be that the practical exercise demanded a relatively large investment of time from the participating nurses. The exercise consisted of administering several forms to at least one patient during a home visit. Nurses who had not used these forms before might have perceived this task as time consuming, as might nurses who chose to administer the forms to several patients.

It is also possible that not all participating professionals fully understood the specific interprofessional teamwork component of the practical exercise. As part of the practical exercise, the nurses were encouraged to discuss the outcome(s) of the home visit with the patient's physician and to collaborate with this physician to take actions as needed. Nonetheless, it is not clear whether they did so in every case.

During the analyses, we found an indication that some professionals may not have fully understood the instructions for the practical exercise. Eight indicated on their questionnaires that they had not completed the practical exercise. Since the nurses' participation in the home visit was unmistakable, we believe these eight professionals were likely physicians who either were not approached by nurses for a discussion or who did not realize the discussion was part of the exercise. Therefore, when the intervention is given again and in new interventions using the ConPrim model, more attention and emphasis must be given to the instructions about the practical, on-the-job exercise. Moreover, future follow-up evaluations could include interviews in which the professionals are given the opportunity to explain what they thought of the practical exercise and other parts of the intervention. Such information could provide more detail about positive and negative aspects of the intervention and facilitate improvements (Thistlethwaite et al., 2014).

4.2. Theory

The professionals overwhelmingly stated that the pedagogy used in ConPrim promoted interactive and interprofessional learning in all three parts of the subject-specific intervention and that the case methodology also promoted learning. As the three parts were carefully designed on the basis of constructive alignment, we interpret these results as supporting the idea that constructive alignment was an appropriate basis for this educational model. Further support for this interpretation is provided by the results of a previous analysis of the effectiveness of the intervention on professionals' subject-specific knowledge (Berggren et al., 2016). Moreover, on a theoretical level, we interpret the results of the current study, together with the results of the effectiveness study, as underlining the importance of the Cochrane Collaboration's call to clearly explain the theories on which continuing educational programs for health professionals are based (Forsetlund et al., 2009). Such information is important, as it can provide the basis for understanding reasons behind the success or lack of success of educational efforts. This information in turn makes it easier to repeat successes and improve educational projects and aspects of projects that are not yet fully successful.

4.3. Limitations and Strengths

One limitation of the study may have been the relatively small number of statements on the study-specific evaluative questionnaire. Because it was possible that the nine statements might not cover everything the professionals thought was important, they were also given the opportunity to provide comments. A second potential limitation was that eight professionals indicated that they had not participated in the practical exercise. A third was that the ten primary health care centers included in the study were not chosen at random. However, because participating centers were located in different geographic areas and their patients represented a variety of socioeconomic groups, the results might be applicable to the other 185 centers under contract to the Stockholm County Council.

The study also had a number of strengths. First, the questionnaire was carefully pilot tested. Second, the model was tested via a subject-specific intervention in primary health care. Educational interventions for individuals often reach those who are most interested in the topic or otherwise motivated to learn about it and miss others who may have an equal or greater need for the intervention (Forsetlund et al., 2009). The current group intervention, however, reached both the nurses and the physicians who should work together as a team to care for patients in home health care. Fourth, the questionnaire was study-specific and evaluated the three-part structure of the model and intervention. At least one group of researchers writing about interprofessional education urges evaluators to carefully think through the outcome they wish to assess and to design their assessments to concretely measure this outcome (Thistlethwaite et al., 2014). The study-specific nature of the questionnaire allowed the research group to gather the answers to the questions in which they were most interested.

4.4. Future Directions

The subject-specific intervention on nutrition will continue to be offered at primary health care centers in Stockholm County. Use of the web-based program has spread to other parts of Sweden as well. The Stockholm County Council has plans to apply ConPrim to design other subject-specific interventions. The research group is currently conducting 1) a quantitative study to evaluate whether and how subject-specific learning differed in the two professional groups that participated in the intervention and 2) a qualitative study to evaluate whether and to what extent interprofessional learning took place during the case seminar discussions.

5. Conclusion

ConPrim is a promising model for continuing educational interventions in primary health care. The professionals gave positive evaluations to the design, pedagogy and adaptation to primary health care of all three parts of the model. However, the time spent on the practical exercise should be adjusted and the instructions for the exercise clarified. With regard to the model as a whole, the professionals agreed that it was suitable to primary health care, that it increased their competence, and that they would be able to use what they had learned in their everyday work. ConPrim should be tested in educational interventions. In the future, ConPrim's influence on clinical practice should also be evaluated.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

All authors have made substantive contributions to the study. EB, PS and LT designed and conceived the study. EB, LT and PS drafted the manuscript. EB carried out the analyses. AÖO, YO and HS revised the manuscript. All authors contributed to the interpretation of the data and approved the final version of the manuscript.

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